2007 PAEMST Application: Dimensions

Dimension One
Personal mastery of mathematics or science content

A brief description of the topic or concept.
1.1.2 Why this topic may be difficult for students to understand.
1.2.1 Key facts, principles, theories, and laws that are relevant and important for students to know and understand about the topic or concepts.
1.2.2 How to communicate the topic to students.
1.3.1 How the topic selected is related to more complex concepts or materials that students will encounter in subsequent grades or courses.
1.4.1 Skills required of students to master the concept.
1.4.2 Examples of applications and problems that demonstrate student understanding and readiness to move to the next level.

Dimension Two
Use of instructional methods and strategies that are appropriate for the learning styles of your students and result in increased student achievement

2. Instructional approaches you incorporated into your teaching to help students master the topic or concepts.
2.1.2 When and in what context the strategies were used.
2.1.3 How the effectiveness of these strategies in advancing student achievement was evaluated.
2.2.1 How students' prior knowledge was assessed.
2.2.2 How students' prior knowledge was addressed in the teaching strategy.
2.3.1 What techniques were helpful in addressing students' varying abilities.
2.3.2 What techniques were helpful in challenging more accomplished students.
2.3.3 What techniques were helpful in involving all students in the learning process.
2.4.1 How and when various teaching techniques were utilized.
2.4.2 How the needs of visual, auditory, and kinesthetic learners were met.

Dimension Three
Effective use of student assessment tools

3.1.1 Assessment of student learning and achievement throughout a given activity.
3.1.2 Assessment of student learning and achievement throughout the school year.
3.1.3 Assessment of student learning and achievement beyond the current school year.
3.2.1 Identification and explanation of each assessment tool utilized.
3.2.2 Rationale for each assessment tool utilized.
3.2.3 Quantitative and qualitative data used to assess student progress.
3.2.4 Use of other student performance indicators.
3.2.5 Teaching effectiveness as measured by student achievement on various assessments.

Dimension Four
Reflective practice to improve instructional delivery and student outcomes

How reflective practices were used to improve classroom instruction and student achievement and performance.
How the effectiveness of a particular lesson or instructional approach was assessed.
How reflection on past activities led to changes in future lesson design and instruction.

4.2.2 How lessons and activities were improved over time.
4.3.1 The need for additional professional development or content knowledge.
4.3.2 How professional development and content knowledge will be acquired.
4.4.1 The most successful aspects of instructional activities presented in the video and why they were effective.
4.4.2 The least effective aspects of instructional activities presented in the video and why they were less successful.
Specific examples of what you would do differently the next time.

Dimension Five
Participation in professional development activities, etc

5.1.1 Ongoing expansion and development of your own background in math or science.
5.2.1 How various forms of professional growth helped improve content knowledge and pedagogical skills in a way that has improved student achievement.
How support was provided to help colleagues improve their classroom performance and student outcomes.
5.3.1 Contributions to student learning and achievement outside the classroom.
5.3.2 Any awards achieved for excellence in teaching or related service.